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FOREST STATISTICS

FOR NORTHERN NEW HAMPSHIRE

Northeastern
Forest Experiment Station
Upper Darby, Pa.
V.L. Harper, Director

FOREST SURVEY RELEASE No. 3

FEBRUARY 1949

This is the third in a series of Forest Survey statistical releases published by the Northeastern Forest Experiment Station. The prior releases in the series are:

No. 1 - Forest Resources of Elk, Forest, McKean, and Warren Counties, Pennsylvania

No. 2 - Forest Statistics for Pendleton, Pocahontas, and Randolph Counties, West Virginia

FOREWORD

This is a report on the statistics of forest area and timber volumes in Carroll, Coos, and Grafton Counties, New Hampshire. Six statistical tables of forest area and sixteen on timber volumes are included. These tables are followed by a brief description of Forest Survey procedure and by estimates of the accuracy of forest-area and timber-volume figures. Because many of the terms used in this release have special meanings, an explanation of the terms used may be found at the end of the report.

This report was prepared by the Forest Survey organization at the Northeastern Forest Experiment Station under the direction of Frank A. Ineson, assisted by Harry W. Camp, Jr., in charge of inventory; Roland H. Ferguson, in charge of compilations; and George B. P. Mullin, field supervisor. Field work in northern New Hampshire began in March 1947 and was completed in May 1948. A survey of public forest land ownership was completed in September and additional tree measurements were made during November 1948 for the purpose of preparing volume tables. Alessio Caporaso, Joseph Mendel, Tudor Richards, and John Zerbe were the individuals primarily engaged in field work. The aerial photographs used in this survey were provided through cooperation with the State of New Hampshire Forestry and Recreation Commission and the Brown Company of Berlin, New Hampshire.

Similar reports will be issued for other counties or county groups within a State as the field work progresses and the statistics are compiled. After an entire State is covered in this manner, a statistical report for the State as a whole will be issued, presenting the findings of the Forest Survey on forest area, timber volume, growth, and commodity drain. Later a comprehensive report analyzing the current and prospective forest situation for the State will be published.

The Forest Survey is conducted in the various forest regions by the forest experiment stations of the Forest Service. The project in the Northeast is directed by the Northeastern Forest Experiment Station with central headquarters in Upper Darby, Pennsylvania.

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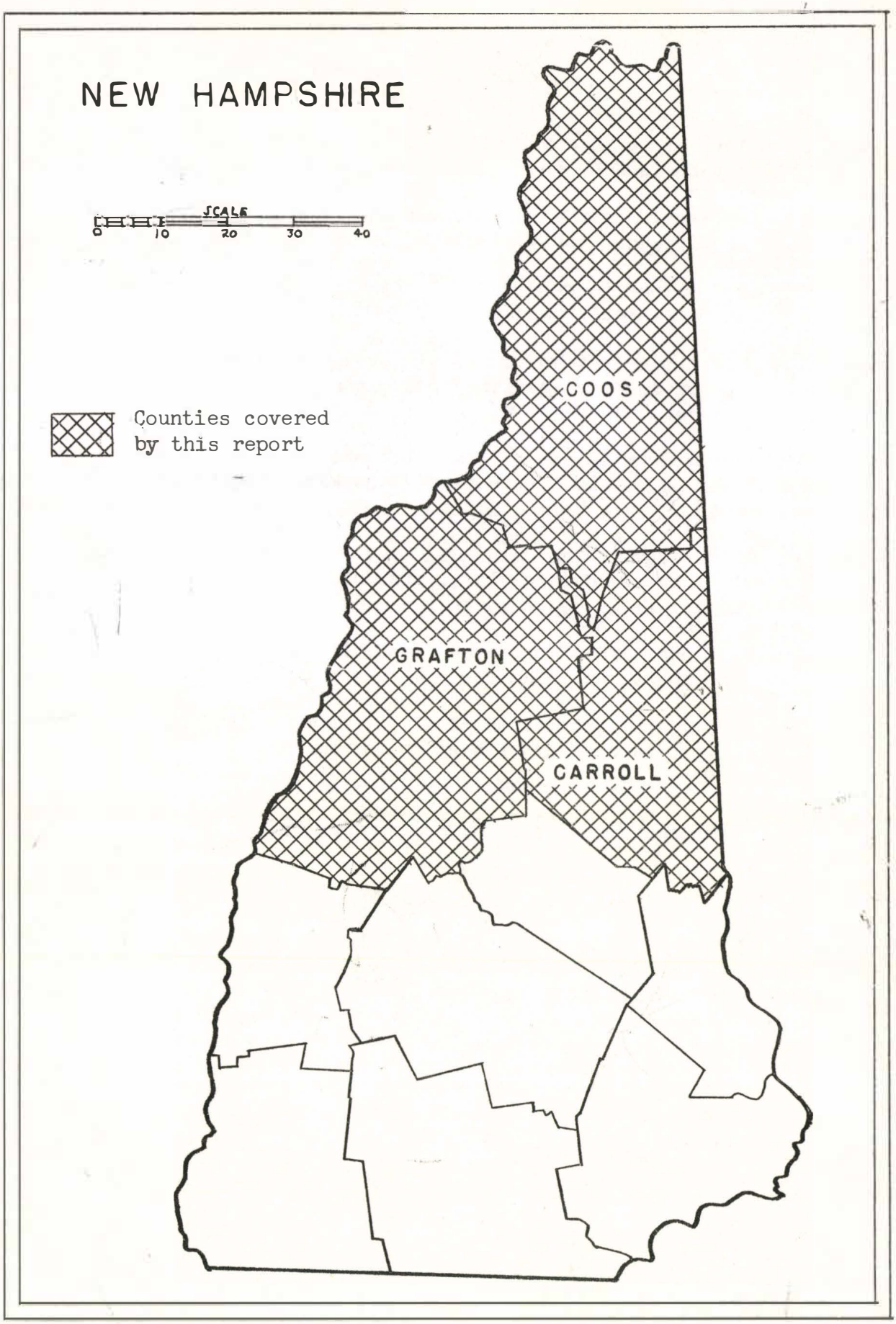

NEW HAMPSHIRE
SCALE
0
10
20
30
40
Counties covered by this report
COOS
GRAFTON
CARROLL

F O R E S T S T A T I S T I C S F O R

N O R T H E R N N E W H A M P S H I R E

compiled by

Forest Survey Staff
Northeastern Forest Experiment Station

SALIENT STATISTICS

Carroll, Coos, and Grafton Counties are the northern counties of New Hampshire. They make up approximately the northern half of the State and have a gross land area of 2,867,200 acres, of which 2,522,600 acres, or 88 percent, is forest land. Permanently treeless areas above timber line were classified as nonforest. There are 124,800 acres of nonproductive forest land and an additional 21,800 acres of productive forest land that has been withdrawn from commercial timber production. The latter includes State forest parks, a few municipal watersheds, and the recreation areas throughout the White Mountain National Forest. The remaining 2,376,000 acres are classified as commercial forest land.

The topography varies from the moderate slopes along the Connecticut River to the extremely rugged slopes of the White Mountains. A characteristic of the topography is the great irregularity of arrangement of mountains. The three main ranges, the Presidential, the Carter-Moriah, and the Franconia, have a generally northeast and southwest direction. There are, in addition, a great number of irregular groups of mountains and isolated peaks scattered throughout the area.

Elevations along the Connecticut River are very moderate, beginning at 320 feet above sea level and rising to elevations of 700 to 1,600 feet. The mountain areas have a base elevation of about 1,500 feet and generally reach a height of over 3,000 feet. Mt. Washington is the highest of the mountain peaks, with an elevation of 6,288 feet.

There are four major rivers that originate in this area; namely, the Connecticut, Merrimack, Androscoggin, and Saco. The Connecticut River forms the western boundary of the area and drains the western parts of Coos and Grafton Counties. The Merrimack and Saco Rivers drain the southern parts of Grafton and Carroll Counties, and the Androscoggin drains northeastern Coos County and flows southerly to the slopes of the Presidential Range where it turns east and leaves New Hampshire. There are a number of lakes in Coos County, and some, generally smaller in size, are scattered through Carroll and Grafton Counties.

Soils range from the relatively deep fertile loams of the river valleys to the extremely thin soils of the higher mountain slopes. The lower mountain slopes are generally strewn with boulders.

The first permanent settlements were made along the broad valleys of the Connecticut, Saco, and Androscoggin Rivers during the period between 1760 and 1765. During this period Governor Wentworth of New Hampshire threw vast areas open for settlement. By 1800 settlement had extended over the greater part of Carroll and Grafton Counties and the southwestern part of Coos County, and it is estimated that the population was approximately 30,000. In 1940 the population of the three counties was 99,508, of which approximately 19,000 was in the city of Berlin. Northern Coos County and the more remote mountain sections of Carroll and Grafton Counties are still sparsely populated. The transportation system has grown so that it has been adequate to serve the increasing population. There are at the present time good highway systems and adequate rail transportation serving the centers of population in the area.

The principal sources of income are from forest product industries recreation services, and agriculture. Agriculture was the primary industry during the settlement period; and as this declined, lumbering took the lead in industrial development and with its allied activities has held this position until the present time. Northern New Hampshire is one of the most popular and heavily used recreation areas in the Northeast. The region's ability to build up this business is due to the combination of mountain terrain, bountiful water supply, and its proximity to the centers of heavy population in southern New England.

Forest land ownership.--The ownership pattern in northern New Hampshire has traditionally been one of large holdings. The majority of the New Hampshire forest land ownerships of more than 5,000 acres lie in this area, and Coos County is notable for the large individual ownerships of pulp and lumber companies. There are 612,600 acres of publicly owned commercial forest land, of which 580,400 acres, or 95 percent, is within the White Mountain National Forest and 32,200 acres in the Franconia and Crawford Notch State Forest Parks, plus a few smaller State and municipal forest areas.

The privately owned commercial forest land, 1,763,400 acres, contains 408,900 acres of farm woodland and 1,354,500 acres of land in industrial and other types of private ownership.

Forest type groups.--The spruce-fir types cover nearly 22 percent of the commercial forest area and are most common in Coos County and in the White Mountain sections of Carroll and Grafton Counties. These types are of great interest to the pulp and paper companies, which form an important part of the wood-using industries in this area. The economic demand for softwood species since the beginning of lumbering in New Hampshire has tended to convert large areas once covered by these

types into hardwoods. Red spruce and balsam fir dominate these stands, although white and black spruce are found, particularly in Coos County. Yellow birch, paper birch, red maple, and occasionally white pine and northern white cedar are found as associate species in some of the stands. These types occupy a wide range of soils from the poorly drained flats and thin upper-slope mountain soils to some of the most productive lower slopes.

The hardwood types cover 57 percent of the commercial forest area. The principal species are yellow birch, sugar maple, and beech, with paper birch, red maple, spruce, fir, and hemlock in association. They cover large areas in Carroll and Grafton Counties but have a lesser importance in northern Coos County, where they are generally interspersed with spruce-fir types.

The aspen-paper birch type group includes pure stands of aspen or paper birch, primarily the latter. There is often a mixture of the two species, with occasional red spruce, balsam fir, red maple, and yellow birch associated. These are temporary types, ordinarily resulting from clear-cuttings or forest fires, and at the present time they cover 8 percent of the commercial forest land area.

The white pine types consist of stands in which white pine, pitch pine, red pine, or hemlock predominate. Red maple, red spruce, and paper birch are the principal associate species. This type occurs in wide bands on sandy lower slopes east of the Connecticut River and throughout most of Carroll and Grafton Counties.

It is recognized that the productivity of forest soil is not a fixed quantity. It may be altered by several factors, such as silvicultural treatment or the occurrence of forest fires. Approximately 80 percent of the commercial forest land is capable at the present time of producing saw-timber trees that have from one and one-half to three 16-foot hardwood logs or three to five 16-foot softwood logs. Less than 1 percent of the area was classified as more productive than this; the remainder as less productive but capable of producing trees with at least one 8-foot merchantable log.

Stand-size classes.--The greater part of the area was cut over or culled for high-grade softwoods during early logging operations. Forest fires of varying intensities commonly accompanied lumbering and land clearing until some time during the early part of this century. In 1903, for example, 84,255 acres were burned over and the amount of damage was estimated at something over $200,000. As the majority of the forests were cut over by extensive logging operations, logging railroads and large sawmills began to disappear and there was a trend toward temporary mills and smaller operations. The areas that were reasonably accessible have generally been cut over one or more times since the original large-scale logging operations, and as a result they have become

extremely variable in stand condition. The areas in the mountain sections and in northern Coos County have been logged less frequently and in larger operations, resulting in more uniform forest conditions.

The saw-timber stands, containing 1,500 board feet or more per acre, and averaging 4,614 board feet, make up nearly 44 percent of the commercial forest land. More than half of the area of saw-timber stands has volumes ranging from 1,500 board feet to 5,000 board feet per acre, and averages only 3,080 board feet.

The pole-timber stands cover 38 percent of the commercial forest land and have volumes ranging from 2½ cords to more than 18 cords per acre. They contain an average of about 1.8 cords of sawlog material and 9.6 cords of other material per acre.

The remaining 18 percent of the commercial forest land is made up of seedling, sapling, poorly stocked stands, and unstocked areas.

Sawlog volume.--The sawlog volume includes all merchantable softwood trees 9.0 inches in diameter (breast height) and larger, estimated to a minimum top diameter inside bark of 6 inches, and hardwood trees 11.0 inches d.b.h. and larger, estimated to a minimum top d.i.b. of 8 inches. The volume of sawlog material in all stands amounts to 5,612,900,000 board feet, about 48 percent of which is in medium and heavy saw-timber stands containing at least 5,000 board feet per acre. Approximately 37 percent of it is in light saw-timber stands ranging from 1,500 to 5,000 board feet per acre. The remainder is scattered throughout the pole-timber stands or is in residual trees in poorly stocked or seedling and sapling stands.

The sawlog volume is nearly equally divided between softwood and hardwood species. Approximately 59 percent of the volume of softwood saw timber and about 41 percent of the volume of hardwood saw timber is in trees less than 16 inches in diameter, breast height. All sawlog volumes are net; that is, deductions have been made for rot, crook, and other defects. The average cull percent for all merchantable softwood saw-timber trees is about 4 percent; for hardwood trees, 12 percent. No board-foot volume estimates are included for cull trees.

Volume in cords.--The total volume of material in all trees 5.0 inches d.b.h. and larger is 37,026,000 standard cords. About 38 percent of this is in pole-timber-size trees, 36 percent in material suitable for sawlogs, and the remainder in cull trees and the upper stems and limbs of saw-timber trees.

Softwoods make up 12,678,000 cords, or about 34 percent of the total volume. Spruce and fir account for approximately one-half of the softwood volume, and the remainder includes white pine, hemlock, pitch pine, and cedar. Hardwoods make up 24,348,000 cords or nearly 66 percent of the total volume. The principal species are yellow birch, sugar maple, beech, paper birch, and red maple.

Cubic-foot volume.--The total solid wood content of all trees 5.0 inches and larger amounts to 2,571,500,000 cubic feet. Only 15 percent of the softwood volume but 28 percent of the hardwood volume is in trees 17.0 inches and larger.

Table 1.--Commercial and noncommercial forest area by county, 1948

Kind of land	Carroll	Coos	Grafton	Total	
	Acres	Acres	Acres	Acres	Percent
Forest:					
Commercial	525,400	984,200	866,400	2,376,000	82.9
Noncommercial:					
Reserved productive	6,900	2,200	12,700	21,800	0.8
Nonproductive	2,200	58,300	64,300	124,800	4.3
Total	9,100	60,500	77,000	146,600	5.1
Total forest	534,500	1,044,700	943,400	2,522,600	88.0
Nonforest	65,800	123,300	155,500	344,600	12.0
All land 1/	600,300	1,168,000	1,098,900	2,867,200	100.0

1/ From Areas of the United States, 1940, Bureau of the Census.

Table 2.--Commercial forest area by ownership class and county, 1948

Ownership class	Carroll	Coos	Grafton	Total	
	Acres	Acres	Acres	Acres	Percent
Federal:					
National forest	132,700	168,700	279,000	580,400	24.4
Other	--	--	--	--	--
Total Federal	132,700	168,700	279,000	580,400	24.4
State, county, and municipal	6,400	10,000	15,800	32,200	1.4
Private:					
Farm woodland 1/	78,600	106,200	224,100	408,900	17.2
Other	307,700	699,300	347,500	1,354,500	57.0
Total private	386,300	805,500	571,600	1,763,400	74.2
All ownerships	525,400	984,200	866,400	2,376,000	100.0

1/ Census of Agriculture: 1945.

Table 3.--Commercial forest area by forest type and county, 1948

Forest type	Carroll	Coos	Grafton	Total	
	Acres	Acres	Acres	Acres	Percent
White pine:					
White pine	59,700	11,800	106,000	177,500	7.5
White pine-hardwood	31,300	--	6,500	37,800	1.6
Hemlock	43,300	16,100	9,400	68,800	2.9
Pitch pine	16,400	--	--	16,400	.7
Total	150,700	27,900	121,900	300,500	12.7
Spruce-fir:					
Spruce-fir	11,700	202,500	109,200	323,400	13.6
Spruce-fir-hardwood	16,700	91,400	61,200	169,300	7.1
Cedar-tamarack-spruce	--	28,800	--	28,800	1.2
Total	28,400	322,700	170,400	521,500	21.9
Aspen-paper birch:					
Aspen	21,700	37,000	72,200	130,900	5.5
Paper birch	10,800	37,000	21,600	69,400	2.9
Total	32,500	74,000	93,800	200,300	8.4
Hardwood:					
Northern hardwood	153,800	276,500	328,700	759,000	31.9
Hardwood-white pine	89,800	--	42,700	132,500	5.6
Hardwood-spruce-fir	53,000	283,100	95,700	431,800	18.2
Ash-maple-elm	6,600	--	8,300	14,900	.6
Oak	10,600	--	4,900	15,500	.7
Total	313,800	559,600	480,300	1,353,700	57.0
All types	525,400	984,200	866,400	2,376,000	100.0

Table 4.--Commercial forest area by county, forest type group, and stand-size class, 1948

Stand-size class	Forest type group				All forest types
	White pine	Spruce-fir	Aspen-paper birch	Hardwood	
	Acres	Acres	Acres	Acres	Acres
CARROLL COUNTY					
Saw-timber stands:					
Medium and heavy	48,800	--	--	76,100	124,900
Light	48,600	5,700	--	136,600	190,900
Pole-timber stands	41,000	17,600	--	79,400	138,000
Seedling and sapling	--	--	21,600	10,800	32,400
Poorly stocked stands	12,300	5,100	10,900	10,900	39,200
All stands	150,700	28,400	32,500	313,800	525,400
COOS COUNTY					
Saw-timber stands:					
Medium and heavy	5,200	41,600	--	95,300	142,100
Light	13,100	97,000	--	174,500	284,600
Pole-timber stands	--	140,600	28,600	202,800	372,000
Seedling and sapling	9,600	19,000	28,600	28,600	85,800
Poorly stocked stands	--	24,500	16,800	58,400	99,700
All stands	27,900	322,700	74,000	559,600	984,200
GRAFTON COUNTY					
Saw-timber stands:					
Medium and heavy	36,200	19,100	4,500	40,500	100,300
Light	45,400	20,700	5,300	124,400	195,800
Pole-timber stands	32,000	103,100	36,600	222,600	394,300
Seedling and sapling	--	18,200	22,600	16,600	57,400
Poorly stocked stands	8,300	9,300	24,800	76,200	118,600
All stands	121,900	170,400	93,800	480,300	866,400
THREE-COUNTY TOTAL					
Saw-timber stands:					
Medium and heavy	90,200	60,700	4,500	211,900	367,300
Light	107,100	123,400	5,300	435,500	671,300
Pole-timber stands	73,000	261,300	65,200	504,800	904,300
Seedling and sapling	9,600	37,200	72,800	56,000	175,600
Poorly stocked stands	20,600	38,900	52,500	145,500	257,500
All stands	300,500	521,500	200,300	1,353,700	2,376,000

Table 5.--Commercial forest area by forest type group and site class, 1948

Forest type group	Site class			All sites
	Good	Fair	Poor	
	Acres	Acres	Acres	Acres
White pine	4,500	245,500	50,500	300,500
Spruce-fir	4,500	400,400	116,600	521,500
Aspen-paper birch	--	120,100	80,200	200,300
Hardwood	4,900	1,146,700	202,100	1,353,700
All types	13,900	1,912,700	449,400	2,376,000
Percent	0.6	80.5	18.9	100.0

Table 6.--Commercial forest area by watersheds and stand-size class, 1948

Stand-size class	Watershed				Total	
	Andro-scoggen	Connect-icut	Merri-mack	Saco		
	Acres	Acres	Acres	Acres	Acres	Percent
Saw-timber stands:						
Medium and heavy	78,500	88,200	99,900	100,700	367,300	15.5
Light	112,900	235,200	161,000	162,200	671,300	28.2
Pole-timber stands	127,800	426,200	202,600	147,700	904,300	38.1
Seedling and sapling	47,600	66,900	39,500	21,600	175,600	7.4
Poorly stocked stands	33,200	118,900	88,000	17,400	257,500	10.8
All stands	400,000	935,400	591,000	449,600	2,376,000	100.0
Percent	16.8	39.4	24.9	18.9	100.0	--

Table 7.--Net board-foot volume on commercial forest land by forest type group, stand-size class, and species group, 1948

(Log scale, International 1/4-inch rule)

Stand-size class and species group	Forest type group				All forest types
	White pine	Spruce-fir	Aspen-paper birch	Hardwood	
	M bd.ft.	M bd.ft.	M bd.ft.	M bd.ft.	M bd.ft.
Saw-timber stands:					
Medium and heavy					
Softwood	662,500	377,500	6,100	391,000	1,437,100
Hardwood	23,500	48,900	33,300	1,179,200	1,284,900
Total	686,000	426,400	39,400	1,570,200	2,722,000
Light					
Softwood	348,900	322,600	--	272,200	943,700
Hardwood	36,100	93,600	18,300	978,400	1,126,400
Total	385,000	416,200	18,300	1,250,600	2,070,100
Pole-timber stands					
Softwood	43,400	132,500	24,400	98,200	298,500
Hardwood	3,700	38,100	16,900	283,400	342,100
	47,100	170,600	41,300	381,600	640,600
Other stands 1/					
Softwood	41,800	4,100	5,300	24,300	75,500
Hardwood	4,600	4,500	3,000	92,600	104,700
Total	46,400	8,600	8,300	116,900	180,200
All stands					
Softwood	1,096,600	836,700	35,800	785,700	2,754,800
Hardwood	67,900	185,100	71,500	2,533,600	2,858,100
Total	1,164,500	1,021,800	107,300	3,319,300	5,612,900
Percent	20.8	18.2	1.9	59.1	100.0

1/ Includes seedling and sapling stands, poorly stocked stands, and unstocked areas.

Table 8.--Average net board-foot volume per acre on commercial forest land by forest type group, stand-size class, and species group, 1948

(Log scale, International 1/4-inch rule)

Stand-size class and species group	Forest type group				All forest types
	White pine	Spruce-fir	Aspen-paper birch	Hardwood	
	Bd.ft.	Bd.ft.	Bd.ft.	Bd.ft.	Bd.ft.
Saw-timber stands:					
Medium and heavy					
Softwood	7,340	6,220	1,360	1,850	3,910
Hardwood	260	800	7,400	5,560	3,500
Total	7,600	7,020	8,760	7,410	7,410
Light					
Softwood	3,260	2,610	--	620	1,400
Hardwood	340	760	3,450	2,250	1,680
Total	3,600	3,370	3,450	2,870	3,080
Pole-timber stands					
Softwood	590	510	370	190	330
Hardwood	50	140	260	560	380
Total	640	650	630	750	710
Other stands					
Softwood	1,390	50	40	120	180
Hardwood	150	60	30	460	240
Total	1,540	110	70	580	420
All stands					
Softwood	3,650	1,600	180	580	1,160
Hardwood	230	360	360	1,870	1,200
Total	3,880	1,960	540	2,450	2,360

Table 9.--Net volume in cords of sawlog material on commercial forest land by forest type group, stand-size class, and species group, 1948

(Standard cords, including bark)

Stand-size class and species group	Forest type group				All forest types
	White pine	Spruce-fir	Aspen-paper birch	Hardwood	
	M cords	M cords	M cords	M cords	M cords
Saw-timber stands:					
Medium and heavy					
Softwood	1,535	944	17	915	3,411
Hardwood	57	113	77	2,742	2,989
Total	1,592	1,057	94	3,657	6,400
Light					
Softwood	827	808	--	664	2,299
Hardwood	91	230	47	2,302	2,670
Total	918	1,038	47	2,966	4,969
Pole-timber stands					
Softwood	107	354	66	243	770
Hardwood	8	92	41	675	816
Total	115	446	107	918	1,586
Other stands					
Softwood	101	11	13	59	184
Hardwood	12	10	8	218	248
Total	113	21	21	277	432
All stands					
Softwood	2,570	2,117	96	1,881	6,664
Hardwood	168	445	173	5,937	6,723
Total	2,738	2,562	269	7,818	13,387
Percent	20.5	19.1	2.0	58.4	100.0

Table 10.--Average number of cords per acre of sawlog material on commercial forest land by forest type group, stand-size class, and species group, 1948

(Standard cords, including bark)

Stand-size class and species group	Forest type group				All forest types
	White pine	Spruce-fir	Aspen-paper birch	Hardwood	
	Cords	Cords	Cords	Cords	Cords
Saw-timber stands:					
Medium and heavy					
Softwood	17.0	15.5	3.8	4.3	9.3
Hardwood	.6	1.9	17.1	12.9	8.1
Total	17.6	17.4	20.9	17.2	17.4
Light					
Softwood	7.7	6.5	--	1.5	3.4
Hardwood	.9	1.9	8.9	5.3	4.0
Total	8.6	8.4	8.9	6.8	7.4
Pole-timber stands					
Softwood	1.5	1.4	1.0	0.5	0.9
Hardwood	.1	.3	.6	1.3	.9
Total	1.6	1.7	1.6	1.8	1.8
Other stands					
Softwood	3.3	0.2	0.1	0.3	0.4
Hardwood	.4	.1	.1	1.1	.6
Total	3.7	0.3	0.2	1.4	1.0
All stands					
Softwood	8.6	4.1	0.5	1.4	2.8
Hardwood	.5	.8	.9	4.4	2.8
Total	9.1	4.9	1.4	5.8	5.6

Table 11.--Net volume in cords of material other than sawlogs on commercial forest land by forest type group, stand-size class, and species group, 1948

(Standard cords, including bark)

Stand-size class and species group	Forest type group				All forest types
	White pine	Spruce-fir	Aspen-paper birch	Hardwood	
	M cords	M cords	M cords	M cords	M cords
Saw-timber stands:					
Medium and heavy					
Softwood	453	339	54	379	1,225
Hardwood	242	633	69	3,058	4,002
Total	695	972	123	3,437	5,227
Light					
Softwood	497	914	14	624	2,049
Hardwood	559	685	74	5,196	6,514
Total	1,056	1,599	88	5,820	8,563
Pole-timber stands					
Softwood	201	1,745	121	477	2,544
Hardwood	121	757	930	4,340	6,148
Total	322	2,502	1,051	4,817	8,692
Other stands					
Softwood	33	92	17	54	196
Hardwood	16	21	100	824	961
Total	49	113	117	878	1,157
All stands					
Softwood	1,184	3,090	206	1,534	6,014
Hardwood	938	2,096	1,173	13,418	17,625
Total	2,122	5,186	1,379	14,952	23,639
Percent	9.0	21.9	5.8	63.3	100.0

Table 12.--Average number of cords per acre of material other than sawlogs on commercial forest land by forest type group, stand-size class, and species group, 1948

(Standard cords, including bark)

Stand-size class and species group	Forest type group				All forest types
	White pine	Spruce-fir	Aspen-paper birch	Hardwood	
	Cords	Cords	Cords	Cords	Cords
Saw-timber stands:					
Medium and heavy					
Softwood	5.0	5.6	12.0	1.8	3.3
Hardwood	2.7	10.4	15.3	14.4	10.9
Total	7.7	16.0	27.3	16.2	14.2
Light					
Softwood	4.6	7.4	2.6	1.4	3.0
Hardwood	5.2	5.6	14.0	11.9	9.7
Total	9.8	13.0	16.6	13.3	12.7
Pole-timber stands					
Softwood	2.8	6.7	1.8	0.9	2.8
Hardwood	1.6	2.9	14.3	8.6	6.8
Total	4.4	9.6	16.1	9.5	9.6
Other stands					
Softwood	1.1	1.2	0.1	0.3	0.5
Hardwood	.5	.3	.8	4.1	2.2
Total	1.6	1.5	0.9	4.4	2.7
All stands					
Softwood	4.0	5.9	1.0	1.1	2.5
Hardwood	3.1	4.0	5.9	9.9	7.4
Total	7.1	9.9	6.9	11.0	9.9

Table 13.--Net board-foot volume on commercial forest land by species and stand-size class, 1948

(Log scale, International 1/4-inch rule)

Species	Saw-timber stands	Pole-timber stands	Other stands	Total	
	M bd.ft.	M bd.ft.	M bd.ft.	M bd.ft.	Percent
Softwoods:					
Spruce	595,400	85,900	13,700	695,000	12.4
Fir	374,500	79,200	9,100	462,800	8.2
Hemlock	352,600	34,200	15,400	402,200	7.2
White pine	965,600	83,500	31,500	1/ 1,080,600	19.2
Pitch pine	71,800	2,400	4,200	78,400	1.4
Other softwoods	20,900	13,300	1,600	35,800	.7
All softwoods	2,380,800	298,500	75,500	2,754,800	49.1
Hardwoods:					
Sugar maple	489,600	58,900	43,600	592,100	10.5
Red maple	151,700	31,700	--	183,400	3.3
Red oak	97,700	11,800	8,400	117,900	2.1
Yellow birch	990,600	128,400	36,300	1,155,300	20.6
Paper birch	207,200	46,100	10,300	263,600	4.7
Beech	385,300	42,500	1,900	429,700	7.7
Ash	53,100	5,000	--	58,100	1.0
Aspen	4,700	4,900	4,200	13,800	.2
Other hardwoods	31,400	12,800	--	44,200	.8
All hardwoods	2,411,300	342,100	104,700	2,858,100	50.9
All species	4,792,100	640,600	180,200	5,612,900	100.0
Percent	85.4	11.4	3.2	100.0	--

1/ Includes 45,000 M board feet of red pine.

Table 14.--Net volume in cords of all trees on commercial forest land by species and stand-size class, 1948

(Standard cords, including bark)

Species	Saw-timber stands	Pole-timber stands	Other stands	Total	
	M cords	M cords	M cords	M cords	Percent
Softwoods:					
Spruce	2,362	938	98	3,398	9.2
Fir	2,083	1,560	104	3,747	10.1
Hemlock	1,302	186	48	1/1,536	4.1
White pine	2,914	488	113	1/3,515	9.5
Pitch pine	225	11	12	248	.7
Other softwoods	98	131	5	234	.6
All softwoods	8,984	3,314	380	12,678	34.2
Hardwoods:					
Sugar maple	2,909	1,212	349	4,470	12.1
Red maple	1,617	823	39	2,479	6.7
Red oak	540	202	106	848	2.3
Yellow birch	5,636	1,628	423	7,687	20.8
Paper birch	1,774	1,599	79	3,452	9.3
Beech	2,903	579	96	3,578	9.7
Ash	326	239	21	586	1.6
Aspen	89	242	55	2/386	1.0
Other hardwoods	381	440	41	2/862	2.3
All hardwoods	16,175	6,964	1,209	24,348	65.8
All species	25,159	10,278	1,589	37,026	100.0
Percent	67.9	27.8	4.3	100.0	--

1/ Includes 135 M cords of red pine.
2/ Includes 525 M cords of so-called nonmerchantable species such as gray birch, pin cherry, hophornbeam, and serviceberry.

Table 15.--Net board-foot volume on commercial forest land by species and county, 1948

(Log scale, International 1/4-inch rule)

Species	Carroll	Coos	Grafton	Total
	M bd.ft.	M bd.ft.	M bd.ft.	M bd.ft.
Softwoods:				
Spruce	86,400	383,800	224,800	695,000
Fir	14,800	420,900	27,100	462,800
Hemlock	205,200	49,100	147,900	402,200
White pine	531,100	63,100	486,400	1,080,600
Pitch pine	72,300	1,900	4,200	78,400
Other softwoods	4,600	31,200	--	35,800
All softwoods	914,400	950,000	890,400	2,754,800
Hardwoods:				
Sugar maple	146,500	341,600	104,000	592,100
Red maple	77,300	54,400	51,700	183,400
Red oak	83,000	--	34,900	117,900
Yellow birch	161,900	742,000	251,400	1,155,300
Paper birch	52,900	100,000	110,700	263,600
Beech	148,800	121,000	159,900	429,700
Ash	26,500	14,900	16,700	58,100
Aspen	800	10,000	3,000	13,800
Other hardwoods	19,900	--	24,300	44,200
All hardwoods	717,600	1,383,900	756,600	2,858,100
All species	1,632,000	2,333,900	1,647,000	5,612,900
Percent	29.1	41.6	29.3	100.0

Table 16.--Net volume in cords of all trees on commercial forest land by species and county, 1948

(Standard cords, including bark)

Species	Carroll	Coos	Grafton	Total
	M cords	M cords	M cords	M cords
Softwoods:				
Spruce	527	1,655	1,216	3,398
Fir	193	3,061	493	3,747
Hemlock	829	170	537	1,536
White pine	1,708	208	1,599	3,515
Pitch pine	225	11	12	248
Other softwoods	12	222	--	234
All softwoods	3,494	5,327	3,857	12,678
Hardwoods:				
Sugar maple	988	2,149	1,333	4,470
Red maple	788	662	1,029	2,479
Red oak	518	14	316	848
Yellow birch	1,014	4,492	2,181	7,687
Paper birch	630	1,697	1,125	3,452
Beech	1,065	1,057	1,456	3,578
Ash	203	111	272	586
Aspen	27	182	177	386
Other hardwoods	353	118	391	862
All hardwoods	5,586	10,482	8,280	24,348
All species	9,080	15,809	12,137	37,026
Percent	24.5	42.7	32.8	100.0

Table 17.--Net cubic-foot volume of all trees on commercial forest land by species, tree class, and kind of material, 1948

(Excluding bark)

Species	Saw-timber trees		Pole-timber trees	Cull trees	Total
	Sawlog material	Upper stems and limbs			
	M cu.ft.	M cu.ft.	M cu.ft.	M cu.ft.	M cu.ft.
Softwoods:					
Spruce	141,300	11,700	107,900	4,200	265,100
Fir	88,800	7,300	185,600	10,600	292,300
Hemlock	74,000	6,500	32,500	6,800	119,800
White pine	193,400	14,600	42,400	23,800	1/ 274,200
Pitch pine	15,200	1,400	2,200	500	19,300
Other softwoods	7,100	700	10,100	300	18,200
All softwoods	519,800	42,200	380,700	46,200	988,900
Hardwoods:					
Sugar maple	89,000	34,800	97,200	69,500	290,500
Red maple	29,000	10,300	86,800	35,100	161,200
Red oak	18,100	7,700	18,000	11,300	55,100
Yellow birch	174,600	70,800	101,900	152,400	499,700
Paper birch	41,500	15,400	143,600	23,900	224,400
Beech	66,800	27,500	71,000	67,200	232,500
Ash	8,900	3,000	19,800	6,400	38,100
Aspen	2,300	800	21,200	800	25,100
Other hardwoods	6,800	2,800	37,300	9,100	2/ 56,000
All hardwoods	437,000	173,100	596,800	375,700	1,582,600
All species	956,800	215,300	977,500	421,900	2,571,500
Percent	37.2	8.4	38.0	16.4	100.0

1/ Includes 10,500 M cubic feet of red pine.
2/ Includes 34,100 M cubic feet of so-called nonmerchantable species such as gray birch, pin cherry, hophornbeam, and serviceberry.

Table 18.--Net volume in cords of all trees on commercial forest land by species, tree class, and kind of material, 1948

(Standard cords, including bark)

Species	Saw-timber trees		Pole-timber trees	Cull trees	Total
	Sawlog material	Upper stems and limbs			
	M cords	M cords	M cords	M cords	M cords
Softwoods:					
Spruce	1,812	149	1,383	54	3,398
Fir	1,138	94	2,379	136	3,747
Hemlock	949	83	417	87	1,536
White pine	2,479	187	544	305	3,515
Pitch pine	195	19	28	6	248
Other softwoods	91	9	130	4	234
All softwoods	6,664	541	4,881	592	12,678
Hardwoods:					
Sugar maple	1,370	535	1,496	1,069	4,470
Red maple	445	159	1,335	540	2,479
Red oak	278	119	277	174	848
Yellow birch	2,686	1,089	1,568	2,344	7,687
Paper birch	638	237	2,209	368	3,452
Beech	1,028	423	1,093	1,034	3,578
Ash	137	46	305	98	586
Aspen	36	12	326	12	386
Other hardwoods	105	43	573	141	862
All hardwoods	6,723	2,663	9,182	5,780	24,348
All species	13,387	3,204	14,063	6,372	37,026
Percent	36.1	8.7	38.0	17.2	100.0

Table 19.--Net volume in cords of all trees on commercial forest land by stand-size class, tree class, and kind of material, 1948

(Standard cords, including bark)

Stand-size class	Saw-timber trees		Pole-timber trees	Cull trees	Total
	Sawlog material	Upper stems and limbs			
	M cords	M cords	M cords	M cords	M cords
Saw-timber stands:					
Medium and heavy	6,400	1,382	2,379	1,466	11,627
Light	4,969	1,275	4,944	2,344	13,532
Pole-timber stands	1,586	428	6,307	1,957	10,278
Other stands	432	119	433	605	1,589
All stands	13,387	3,204	14,063	6,372	37,026

Table 20.--Net board-foot volume on commercial forest land by species group, diameter class, and county, 1948

(Log scale, International 1/4-inch rule)

SOFTWOODS

Diameter class (Inches)	Carroll	Coos	Grafton	Total	
	M bd.ft.	M bd.ft.	M bd.ft.	M bd.ft.	Percent
10	143,500	250,400	192,500	586,400	21.3
12	156,100	235,900	169,600	561,600	20.4
14	171,800	162,700	131,500	466,000	16.9
16	162,400	132,900	119,900	415,200	15.1
18	105,600	75,300	107,200	288,100	10.5
20	91,700	26,700	84,000	202,400	7.3
22	40,400	24,500	50,800	115,700	4.2
24	11,700	22,600	25,100	59,400	2.1
26 and over	31,200	19,000	9,800	60,000	2.2
All softwoods	914,400	950,000	890,400	2,754,800	100.0
HARDWOODS					
12	157,900	223,100	204,100	585,100	20.5
14	149,600	252,500	188,500	590,600	20.7
16	127,300	231,700	136,300	495,300	17.3
18	110,300	195,800	78,800	384,900	13.5
20	54,000	161,100	54,900	270,000	9.4
22	55,200	111,500	49,300	216,000	7.5
24	21,800	97,900	20,000	139,700	4.9
26 and over	41,500	110,300	24,700	176,500	6.2
All hardwoods	717,600	1,383,900	756,600	2,858,100	100.0
All species	1,632,000	2,333,900	1,647,000	5,612,900	--

Table 21.--Net cubic-foot volume of all trees on commercial forest land by species group, diameter class, and county, 1948

(Excluding bark)

SOFTWOODS

Diameter class (Inches)	Carroll	Coos	Grafton	Total	
	M cu.ft.	M cu.ft.	M cu.ft.	M cu.ft.	Percent
6	30,600	103,700	55,500	189,800	19.2
8	40,000	110,100	55,500	205,600	20.8
10	35,800	60,500	47,700	144,000	14.6
12	34,800	50,600	36,700	122,100	12.3
14	37,200	33,400	27,400	98,000	9.9
16	31,900	26,300	23,200	81,400	8.2
18	21,300	14,100	20,600	56,000	5.7
20	17,000	4,700	14,400	36,100	3.7
22	7,200	4,300	8,700	20,200	2.0
24	3,000	4,000	5,300	12,300	1.2
26 and over	13,800	3,800	5,800	23,400	2.4
All softwoods	272,600	415,500	300,800	988,900	100.0
		HARDWOODS			
6	46,300	80,600	99,000	225,900	14.3
8	58,400	86,700	92,500	237,600	15.0
10	42,000	75,400	80,500	197,900	12.5
12	42,600	62,200	57,200	162,000	10.2
14	39,000	69,600	52,300	160,900	10.2
16	35,500	72,100	41,100	148,700	9.4
18	29,200	61,700	31,200	122,100	7.7
20	18,700	48,500	24,400	91,600	5.8
22	13,100	39,100	21,900	74,100	4.7
24	9,500	36,600	11,100	57,200	3.6
26 and over	28,700	48,900	27,000	104,600	6.6
All hardwoods	363,000	681,400	538,200	1,582,600	100.0
All species	635,600	1,096,900	839,000	2,571,500	--

Table 22.--Species composition of each forest type group, expressed in percent of net cubic-foot volume, 1948

Species	Forest type group			
	White pine	Spruce-fir	Aspen-paper birch	Hardwood
	Percent	Percent	Percent	Percent
Softwoods:				
Spruce	3.4	26.8	12.9	5.6
Fir	1.3	37.3	5.2	4.5
Hemlock	13.1	.9	1.3	4.3
White pine	57.2	3.0	1.8	3.1
Pitch pine	5.1	.1	--	.0
Other softwoods	.2	3.0	--	.0
All softwoods	80.3	71.1	21.2	17.5
Hardwoods:				
Sugar maple	1.2	2.2	3.1	17.7
Red maple	4.8	5.1	9.1	6.9
Red oak	2.5	--	3.2	2.8
Yellow birch	1.2	10.3	2.8	28.5
Paper birch	3.4	8.6	50.8	7.0
Beech	1.3	.4	1.2	14.7
Ash	.3	.6	.2	2.2
Aspen	1.0	1.1	5.5	.6
Other hardwoods	4.0	.6	2.9	2.1
All hardwoods	19.7	28.9	78.8	82.5
All species	100.0	100.0	100.0	100.0

FOREST SURVEY PROCEDURE

These estimates of forest area and timber volume are based upon data obtained from a sampling of the three counties. The following procedure was used:

Photo interpretation.--A large number of plots (about one to every 370 acres) were distributed regularly over the aerial photographs covering these counties. Photo interpreters first determined whether each plot was forest or nonforest. If forest, the stand in which the plot was located was examined by stereoscope and classified as to forest type and stand-size class (based on stand volume and density).

Ground plot examination.--The next step was to examine on the ground enough 1/2-acre forest plots randomly selected from those previously examined on aerial photos in order to establish a reliable average volume per acre from a tally of trees by species and diameters at breast height. Estimates of cull, site quality, past use, and other items also were recorded from the ground plots. An average of about one ground plot was selected to every 7,027 acres of forest land.

Compilation of data.--Photo-interpretation and field-plot data were entered on punch cards in the Upper Darby office. Tabulations were made from these data, resulting in the set of tables herewith.

ACCURACY OF DATA

The number of observations taken on the aerial photographs and the number of ground plots examined in each stand-size class were designed to yield forest-area and volume estimates of the highest practicable degree of sampling accuracy for the personnel and equipment available. Some errors in the forest inventory are inescapable because: (1) area classifications may be imperfect and volume of sample trees is derived from measurements of diameter, height, and form with adjustments for estimated defect; and (2) the estimated total is obtained by "blowing up" a sample.

Errors of the first class include mistakes in measurement and judgment, imperfect volume tables, and possible faulty adjustment for defects. Every effort was made to keep such errors to a minimum and compensating, but the degree to which this may have been attained cannot be measured satisfactorily. Errors of the second class are due to failure of the sample to perfectly represent the whole. Such errors

are measurable. The sampling errors for principal items for these counties as a whole are expressed below as percentages of their respective totals:

	Percent
Forest area	± 1.7
Saw-timber area	± 5.3
Pole-timber area	± 7.1
Total board-foot volume	± 5.0
Board-foot volume in saw-timber stands	± 6.8
Total cubic-foot volume	± 3.1
Cubic-foot volume in pole-timber stands	± 8.5

If no bias and no systematic errors are assumed, it is reasonable to expect that actual areas and volumes will be within the indicated range of reported areas and volumes about two times in three, and within the range of two sampling errors about 19 times in 20. For example, the chances are about two out of three that the forest area would not differ more than 1.7 percent from that reported herein. The chances are about 19 in 20 that the forest area would not differ more than 3.4 percent or twice that for one sampling error. Corresponding statements may be made for each of the other items for which sampling errors are given.

Statistics of forest area by type, stand-size class, etc., reported in the tables herewith are subject to increasing sampling error as the class becomes finer and its numerical magnitude smaller. In general, experience to date indicates the ranges in area sampling error shown below:

Class area in acres	Approximate area sampling error in percent
Less than 50,000:	Variable, usually over 40
50,000 to 100,000:	Ordinarily between 20 and 40
100,000 to 300,000:	Usually between 10 and 20
More than 300,000:	Commonly less than 10, but may be as high as 20

Volume sampling errors are larger (in percentage) than area errors and have a tendency to vary by stand-size class. Sampling errors of

board-foot data are usually larger than corresponding errors in cubic feet. The percentage additions that should generally be made to area sampling errors in order to estimate volume sampling errors are shown below:

Stand-size class	Volume sampling errors in relation to area sampling errors	
	For board feet	For cubic feet
	Percent	Percent
Saw timber:		
Medium and heavy	Add 1	Add 1
Light	Add 2	Add 1
Pole timber	Add 6 to 10	Add 2 to 3

Board-foot and cubic-foot volumes per acre are extremely variable for seedling and sapling and poorly stocked stands. The volume sampling errors for these stand-size classes are erratic and may be from 25 to 100 percent higher than the area sampling errors.

EXPLANATION OF TERMS USED

AREA

Land area.--Includes dry land and land temporarily or partially covered by water, such as marsh land, swamps, and river flood plains, streams, sloughs, estuaries, and canals less than one-eighth of a statute mile in width; and lakes, reservoirs, and ponds having less than 40 acres of area. (See "Areas of the United States, 1940," U. S. Bureau of the Census, page 2.) Does not include water areas larger than those defined above nor deeply indented embayments and sounds and other coastal water behind or sheltered by headlands or islands separated by less than 1 nautical mile of water; and islands having less than 40 acres of area.

Forest area.--Land bearing forest growth or land from which the forest has been removed but which shows evidence of past forest occupancy and which is not now in other use. Except for right of ways of active power lines, highways, roads, and railroads that are not abandoned, strips of nonforest land less than 100 feet wide and areas of less than 1 acre surrounded by forest were classified as forest.

Commercial forest area.--Forest land bearing or capable of bearing pole-timber or saw-timber stands of commercial character and economically

available now or prospectively for commercial use and not formally withdrawn from such use.

Noncommercial forest area.--Two classes of forest land are included: (1) reserved productive--forest land bearing or capable of bearing pole-timber or saw-timber stands of commercial character but formally withdrawn from commercial use for parks, preserves, wilderness areas, and so forth; and (2) nonproductive--other forest land permanently incapable of producing commercial pole-timber or saw-timber stands. The latter areas are either rocky, mountainous, or do not possess the climate and soil qualities essential for the production of commercial timber crops.

Nonforest area.--All land areas other than forest, including the acreage in cultivation and pasture less than 30 percent covered by tree canopy; land enclosed within the right of ways of active power lines, highways, roads, and railroads; abandoned roads when the soil has been removed or the pavement remains; marshes, bare rock, quarries, coal strippings, and gravel pits; water areas such as lakes, reservoirs, and ponds having less than 40 acres of area, and streams, sloughs, estuaries, and canals less than one-eighth mile in width (larger water areas are classified as "inland water" by the Bureau of the Census and are not included within land area figures); and urban and other residential and industrial areas. Narrow belts of trees such as fence rows and stream margins less than 100 feet in width and small groups of trees less than one acre in area that are surrounded by nonforest land are considered nonforest.

FOREST TYPE GROUPS

(Board-foot volume of each species in saw-timber stands and number of stems in other stand-size classes was the basis for forest type classifications. Table 3 shows the detailed forest types that are combined in each forest type group. Table 22 gives the species composition of each forest type group, expressed in percent of net cubic-foot volume.)

White pine.--The principal types included are the white pine (white pine making up 75 percent or more of the stand), hemlock (hemlock pure or predominant over any single associate), and white pine-hardwood (white pine comprising 50 to 74 percent of the stand). Stands in which pitch pine makes up 75 percent or more of the stand also are included in this type group.

Spruce-fir.--Spruce and balsam fir make up 75 percent of the spruce-fir stands and 50 to 74 percent of the spruce-fir-hardwood stands. A smaller area of the cedar-tamarack-spruce type is included.

Aspen-paper birch.--Small pure stands of quaking and bigtooth aspen or extensive areas of paper birch, or stands in which aspen and paper birch predominate in mixture with spruce, balsam fir, and red maple.

Hardwood.--Hardwoods are predominant in the stands included in this type group. The northern hardwood type, made up largely of yellow birch, sugar maple, and beech is the principal one in this type group. Next in importance is the hardwood-spruce-fir type in which spruce and fir make up 20 to 49 percent of the stand in mixture with hardwoods. The hardwood-white pine, ash-maple-elm, and oak types also are included in this type group.

STAND-SIZE CLASSES

(The minimum area classified according to stand-size was 1 acre.)

Medium and heavy saw-timber stands.--Stands that had a net volume of 5,000 board feet or more per acre.

Light saw-timber stands.--Stands that had a net volume of 1,500 to 4,999 board feet per acre.

Pole-timber stands.--Stands that had a net volume of less than 1,500 board feet per acre and at least 10 percent of the area covered by the crown canopy of pole-timber or larger trees. At least one-half the minimum stocking was in pole-timber trees. These stands generally contained at least 200 cubic feet per acre in trees 5.0 inches d.b.h. and larger.

Seedling and sapling stands.--Stands that did not qualify either as saw timber or pole timber but were well stocked with seedlings and saplings (at least 40 percent of the stand area covered by crown canopy). These stands generally contained at least 300 seedlings and saplings 1.0 to 4.9 inches d.b.h. per acre.

Poorly stocked stands.--Stands that did not qualify as saw timber or pole timber but were at least 10 percent stocked with saw-timber or pole-timber trees or with 10 to 39 percent of the crown canopy in seedlings and saplings.

Unstocked areas.--Stands that did not qualify as saw timber, pole timber, or seedling and sapling and were less than 10 percent stocked.

SITE CLASS

Site class.--Based on the average number of logs produced by mature trees in commercial forest areas. Where mature, dominant, or codominant trees were present, the following merchantable height classes,

based on 16-foot logs, were used:

Site	Hardwoods	Softwoods
Good	3 or more logs	5 or more logs
Fair	1½ to 3 logs	3 to 5 logs
Poor	8 feet to 1½ logs	8 feet to 3 logs
Nonproductive	(See definition under AREA)	

Where no mature trees of the dominant or codominant crown classes were present, site was estimated from the species and growth of immature trees, the depth and type of soil, aspect, soil moisture, and the shrubby and herbaceous ground cover. Poor sites that are incapable of producing pole-timber or saw-timber stands were classed as nonproductive (noncommercial forest area).

VOLUME ESTIMATES

(Volume in trees on areas classified as nonforest is not included; all volumes are net, that is, with defect deducted.)

Board-foot volumes.--Includes the sawlog material in saw-timber trees estimated through use of the International 1/4-inch log rule, which closely approximates green lumber tally for square-edged boards. Top diameters vary with the limits of usable sawlog material. Deductions have been made for rot, crook, and other defects.

Cubic-foot volume.--Includes the sound wood, excluding bark, in: (1) the sawlog portion of saw-timber trees, (2) the upper stems of softwood saw-timber trees and the upper stems and limbs of hardwood saw-timber trees to a minimum of 4 inches inside bark, (3) the full stems of pole-timber trees to a minimum of 4 inches inside bark, and (4) the sound wood volume of cull trees. No deductions were made for defects unless they affected the wood structure.

Volume in cords.--This volume was derived from the net cubic-foot volume (excluding bark) by applying a factor of 78 cubic feet per cord for softwoods and 65 cubic feet per cord for hardwoods. Although the number of cubic feet per cord varies with the size of material, these converting factors were used for all material in this report. The resulting figures approximate the volume of a standard stacked cord (4 feet by 4 feet by 8 feet), including bark. No deductions were made for defect unless they affected the wood structure.

TREE CLASSES

Saw-timber tree.--A softwood tree at least 9.0 inches d.b.h. (diameter outside bark at 4½ feet above the ground on the upper side of the tree) or a hardwood tree at least 11.0 inches d.b.h. with a sound log at least 8 feet long and with at least half of the gross volume of the tree in merchantable material.

Pole-timber tree.--A tree that ranged from 5.0 inches d.b.h. up to the minimum saw-timber tree size and that gave promise of becoming a merchantable saw-timber tree.

Cull tree.--A tree that did not qualify as a saw-timber or pole-timber tree because of poor form, limbiness, rot, or other defect.

Tree-diameter class.--Each 2-inch diameter class included all trees measured in the range from 1.0 inch below the midpoint of the class up to but not including 1.0 inch above the midpoint. For example, the 6-inch class included all trees whose diameters fall in the range of 5.0 inches up to but not including 7.0 inches.

SPECIES

The various tree species found in this area are listed below. Approved common names 1/ are shown in parentheses if these differ from the brief name used in the tables. Approved scientific names 1/ are underlined. If two or more species are included under a single name in the tables, the various species are listed or the word "species" appears after the approved scientific name for the genus.

Softwoods

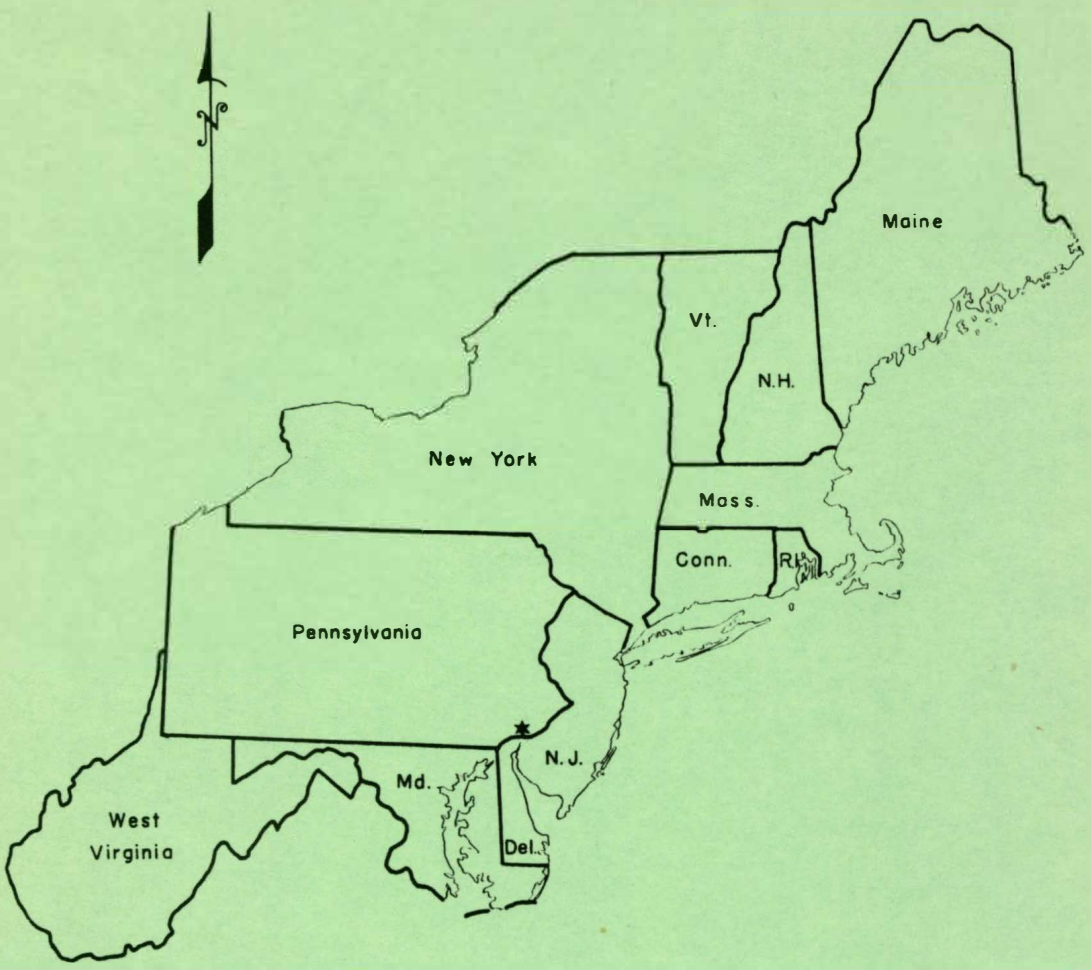
Spruce (Red spruce)	- Picea rubens
(White spruce)	- Picea glauca
(Black spruce)	- Picea mariana
Fir (Balsam fir)	- Abies balsamea
Hemlock (Eastern hemlock)	- Tsuga canadensis
White pine (Eastern white pine) 2/	- Pinus strobus
Pitch pine	- Pinus rigida
Other softwoods (Jack pine)	- Pinus banksiana
(Cedar, Northern white-cedar)	- Thuja occidentalis
(Tamarack)	- Larix laricina

1/ U. S. Forest Service. Check list of the native and naturalized trees of the United States, including Alaska. U. S. Dept. Agr. 325 pp. 1944.

2/ Red pine (Pinus resinosa) has been included under white pine.

Hardwoods

Sugar maple		- Acer saccharophorum
Red maple		- Acer rubrum
Red oak (Northern red oak)		- Quercus borealis
Yellow birch		- Betula lutea
Paper birch		- Betula papyrifera
Beech (American beech)		- Fagus grandifolia
Ash		- Fraxinus species
Aspen (Bigtooth aspen)		- Populus grandidentata
(Quaking aspen)		- Populus tremuloides
Other hardwoods	(American basswood)	- Tilia americana
	(American elm)	- Ulmus americana
	(Blackgum)	- Nyssa sylvatica
	(Downy serviceberry)	- Amelanchier arborea
	(Gray birch)	- Betula populifolia
	(Eastern hophorn-beam)	- Ostrya virginiana
	(Pin cherry)	- Prunus pennsylvanica



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